

BACHELOR'S DEGREE IN ICT SYSTEMS ENGINEERING

UPC MANRESA
Manresa School of Engineering



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

International Campus of Excellence

The only qualification of its kind in Spain

2014 Award for Quality in University Teaching

20% of students participate in mobility programmes

Teaching based on real projects proposed by companies

96% of graduates are in work*

*Source: Graduate employment survey of Catalan universities by the Catalan University Quality Assurance Agency (AQU Catalunya) 2020.

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What do a car, a tablet, an elevator, a resonance system and smart cities have in common? They all integrate elements of electronics, informatics and communications, the three areas of knowledge that make up information and communication technologies (ICTs).

The bachelor's degree in ICT Systems Engineering offers versatile, integrated training in ICTs that provides the vision needed to develop current and future products and systems in which electronics, informatics and communications play closely linked and coordinated roles. This degree responds to an emerging sector that has a great impact, that of embedded systems, which are present in, for example, automobiles, home automation, industrial machinery, medical equipment, consumer electronics and traffic control systems.

What we offer you

The fact that it integrates the three areas of ICTs in a single curriculum is a distinguishing feature of the bachelor's degree in ICT Systems Engineering. As a student, you will:

- Acquire a solid scientific grounding that will allow you to understand current and future technology.
- Become familiar with electronics, informatics and communications, and particularly the connection between the three disciplines, to solve problems and improve products.
- Apply technological knowledge to solve real-world problems.
- Get to know the business world, through its connection to the University, and its values, such as innovation, competitiveness, teamwork, communication and creativity.

Teaching

Teaching activity is focused on the students and their growth as engineers. For the professors, students are engineers in training from the very first day and this attitude permeates many aspects of day-to-day functioning:

- Learning based on practical training.
- Courses in electronics, informatics and communications complemented by others that integrate the three areas and that may be based on projects proposed by companies.
- A total of 30 credits for optional subjects so that you can design your own curriculum.
- Integrated theoretical and practical training through cross-disciplinary projects and practicals.
- Fostering of teamwork on real and integrated projects.
- A collaborative, but also demanding, work atmosphere that fosters autonomy, initiative and responsibility.
- Close contact with professors, who provide academic guidance and tutoring.

Go international!

International experience is an important part of your training. That's why we offer international mobility from the third year onwards. The School has agreements with several universities, all of them renowned in the bachelor's degree's areas of knowledge.

Open classroom, open laboratory

You will have access to the open classroom and open laboratory in which you can study, work in a group, interact with fellow students and do your individual assignments.

Professional opportunities

You will work on designing, implementing and managing modern devices and systems that incorporate elements of ICTs. You may find employment in companies in the ICT sector, but also in companies in other sectors in which information and communication technology adds value. Your professional career may also develop in the fields of electronics, informatics and communications.

Curriculum

This information may be subject to change. Up-to-date information is available at upc.edu

240 ECTS

1st year 1st semester

Basic Mathematics for Engineering	6
Physics	6
Fundamentals of Mathematics for ICTs	6
Informatics	6
Introduction to Digital Systems	6

2nd semester

Statistics	6
Complementary Technologies I	6
Digital Systems	6
Circuit Theory	6
Programming Technology	6

2nd year 1st semester

Advanced Mathematics for Engineering	6
Complementary Technologies II	6
Business	6
Programmable Devices	6
Linear Circuits and Systems	6

2nd semester

Low-Level Programming	6
Computer Architecture	6
Radiofrequency Circuits and Systems	6
Signals and Systems	6
Analogue Systems	6

3rd year 1st semester

Project Management and Orientation	6
Comunicacion Networks	6
Digital Signal Processing	6
Concurrent and Real-Time Programming	6
Operating Systems	6

2nd semester

Embedded Systems	6
Systems Engineering	6
Electronic Control Systems	6
Internet Applications and Services	6
Optional subject*	6

4th year 1st semester

Optional subjects*	18
Systems Integration	6
Automatic and Robotic Systems	6

2nd semester

Optional subject*	6
Bachelor's Thesis	24

* Optional subjects
Microelectronics / Secret and Security in Information Coding / Business English / Quality Management and Integrated Quality, Safety and Environmental Management Systems / Databases / User Interfaces / Energy Resources

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At the Manresa School of Engineering you will find:

- teaching staff who are committed to students' learning and well-being,
- cutting-edge research,
- degrees that integrate theoretical and practical education through work on real projects,
- many options to extend your CV, such as international mobility programmes, work placements and a job bank.



Training the engineers of the future



Further information:

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